

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-7 and 9-13 are presently active, Claim 8 is canceled without prejudice, Claim 1 is amended, and Claim 13 is added by the present amendment. The amendment of Claim 1 and new Claim 13 find non-limiting support in Applicants' specification as originally filed, for example from page 25, line 19 through page 26, line 3, Examples 1-17 and original Claim 8. Therefore, the amendment and the new claim are not believed to raise a question of new matter.

In the outstanding Office Action, Claims 1-4 and 6-12 were rejected under 35 U.S.C. § 102(e) as anticipated by Gaudiana et al. (U.S. Pub. 2003/0188777). Claim 5 was rejected under 35 U.S.C. § 103(a) as unpatentable over Gaudiana et al. in view of Wariishi et al. (U.S. Pat. 6,376,765).

Regarding the rejection under 35 U.S.C. § 102(e) and § 103(a), Applicants respectfully submit that the rejection is overcome because, in Applicants' view, amended independent Claim 1 patentably distinguishes over Gaudiana et al. and Wariishi et al. as discussed below.

Claim 1 is amended to further recite "... the carboxylic compound is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid,"

The chemical formulas of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid are $\text{CH}_3\text{CO}_2\text{H}$, $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$, $\text{BrCH}_2\text{CH}_2\text{COOH}$, $\text{C}_6\text{H}_5\text{CO}_2\text{H}$ and $\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$, respectively. Thus, the carboxylic compound recited in Claim 1 does not include a nitrogen atom (N), which is conjugated with an aromatic compound. Once a dye carried on a surface of a semiconductor electrode is excited by absorbing light, electrons are

transferred from the dye to the semiconductor electrode, thereby generating power. The carboxylic compound, which is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, suppresses backflow of the electrons from the semiconductor electrode to an electrolyte composition, thereby improving energy conversion efficiency.¹

The outstanding Office Action indicates that Gaudiana et al. at paragraphs (0006) and (0116) describes the carboxylic compound including propionic acid (Office Action at page 3, lines 14-15). However, co-sensitizers described in Gaudiana et al. are diphenylamino-benzoic acid, 2,6bis(4-benzoicacid)-4-(4-N,N-diphenylamino)- phenylpyridine carboxylic acid, or N',N-diphenylaminophenylpropionic acid (Gaudiana et al. at paragraph 0006), DPABA (diphenylaminobenzoic acid) where A=COOH and DEAPA (N',N-diphenylaminophenylpropionic acid) with A as the carboxy derivative COOH (Gaudiana et al. at paragraph 0116). That is, all the co-sensitizers taught by Gaudiana et al. include a nitrogen atom (N), which is conjugated with an aromatic compound, and therefore, are different from acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, which do not include a nitrogen atom.

Moreover, the co-sensitizer described in Gaudiana et al. donates its electrons to an acceptor to form stable cation radicals (Gaudiana et al. at paragraph (0112)). For this purpose, Gaudiana et al. describes that the co-sensitizer preferably includes conjugation of a free electron pair on a nitrogen atom with a hybridized orbitals of aromatic rings to which the nitrogen atom is bonded (Gaudiana et al. at paragraph (0112)). In other words, Gaudiana et al. does not teach or suggest using propionic acid and 3-bromopropionic acid, which do not include a nitrogen atom, as the co-sensitizer.

¹ See, for example, the specification at page 34, line 14 through page 35, line 6.

Thus, Gaudiana et al. fails to teach or suggest "... the carboxylic compound is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, ...," as recited in Claim 1.

Likewise, Wariishi et al. fails to teach or suggest at least "... the carboxylic compound is at least one acid selected from the group consisting of acetic acid, propionic acid, 3-bromopropionic acid, benzoic acid and butyric acid, ...," as recited in Claim 1.

Accordingly, independent Claim 1 patentably distinguishes over Gaudiana et al. and Wariishi et al. Therefore, Claim 1 and the pending Claims 2-7 and 9-13 dependent from Claim 1 are believed to be allowable.

Consequently, in view of the present amendment and in light of the above discussions, it is believed that the outstanding rejection is overcome, and the application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Customer Number

22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

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